

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)

09/623852

INTERNATIONAL APPLICATION NO.
PCT/EP99/01163INTERNATIONAL FILING DATE
23 February 1999 (23-02-99)PRIORITY DATE CLAIMED
10 March 1998 (10-03-98)

TITLE OF INVENTION

OPERATING METHOD FOR A DATA BUS WITH A PLURALITY OF NODES

APPLICANT(S) FOR DO/EO/US Martin PELLER, Christian MARSCHNER

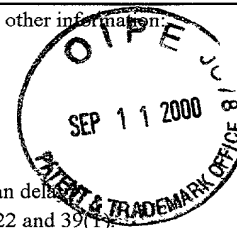
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2))
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3))
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (EXECUTED)
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).


Item 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☒ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

- a. International Search Report
- b. 5 sheets of drawings showing Figures 1-5
- c. First page of Published Application



533 Rec'd PCT/PTO 11 SEP 2000

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 09/623852		INTERNATIONAL APPLICATION NO PCT/EP99/01163		ATTORNEY'S DOCKET NUMBER 951/49160	
17. <input checked="" type="checkbox"/> The following fees are submitted: Basic National Fee (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO \$840.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) \$670.00 No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$760.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO \$970.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) \$96.00 ENTER APPROPRIATE BASIC FEE AMOUNT =				CALCULATIONS	PTO USE ONLY
				\$840.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).					
Claims	Number Filed	Number Extra	Rate		
Total Claims	7-20=	0	X \$18.00	\$	
Independent Claims	2-3=	0	X \$78.00	\$	
Multiple dependent claims(s) (if applicable)			+ \$260.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$840.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				\$	
SUBTOTAL =				\$840.00	
Processing fee of \$130.00 for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$--	
TOTAL NATIONAL FEE =				\$840.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28,3.31). \$40.00 per property +				\$40.00	
TOTAL FEE ENCLOSED =				\$880.00	
				Amount to be: refunded \$	
				charged \$	
a. <input checked="" type="checkbox"/> Two checks in the amount of \$ <u>840.00</u> for the filing fee and \$ <u>40.00</u> for the assignment recording fee are enclosed b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees, which may be required, or credit any overpayment to Deposit Account No. <u>05-1323</u> A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: Evenson, McKeown, Edwards & Lenahan, P.L.L.C. 1200 G Street, N.W., Suite 700 Washington, D.C. 20005 Tel. No. (202) 628-8800 Fax No. (202) 628-8844					
				 SIGNATURE Vincent J. Sunderdick	
				NAME 29,004	
				REGISTRATION NUMBER September 11, 2000	
				DATE	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: MARTIN PELLER ET AL.

Serial No.: NOT YET ASSIGNED PCT No. PCT/EP99/01163

Filed: September 11, 2000

Title: OPERATING METHOD FOR A DATA BUS WITH A
PLURALITY OF NODES

PRELIMINARY AMENDMENT

Box PCT Application
Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified
application as follows:

IN THE SPECIFICATION:

A substitute specification is submitted herewith.

IN THE CLAIMS:

Please cancel claims 1-4 and add new claims 5-11 as follows:

-- 5. A process for operating a plurality of nodes through
a configured data bus wherein said nodes are in communication
with one another through said configured data bus, said method
comprising the steps of:

connecting at least one of said nodes through a light guide
to said data bus configuration;

providing synchronizing pulses to synchronize each of said
nodes;

transmitting information signals from said nodes with a hierarchical transmission sequence including the step of starting transmission of said information signals so that said information elements are independent of any one of said nodes and wherein said starting transmission has a start time which is solely a function of said hierarchal transmission sequence.

6. Process according to claim 5, wherein the transmission start time for an information element for a predetermined node is set to be later than when said predetermined node had previously received an information element from another one of said nodes.

7. Process according to claim 5, further comprising the step of setting a delay time for each node within one cycle of said transmission sequence wherein the length of said delay time is complimentary to a signal transit time between a predetermined node and said data bus.

8. The process according to claim 5, wherein the delay time is a function of the type of connection between a node and the data bus.

9. A system for providing communication between a data bus and a plurality of nodes wherein said nodes are connected to each other through said data bus;

a light guide for connecting at least one of said nodes to said data bus;

means for providing synchronizing pulses to synchronize the operation of said at least one node when information elements are transmitted from said nodes with a hierarchical transmission sequence;

adaptation element for providing start time points of said information element whereby said start time points are independent of any one node and are only a function of said transmission sequence.

10. The system according to claim 9, wherein said adaptation elements further set a transmission time for an information element when a predetermined node has previously transmitted and wherein said transmission time point is set later than when said predetermined node previously received an information element from another node.

11. The system according to claim 9, wherein said adaptation elements set a delay time for each cycle of transmission sequence for each node wherein the length of said delay time is complimentary to the signal transit time between each node and the data bus.

12. The system according to claim 11, wherein the delay time is a function of the type of connection between a node and the data bus.--

IN THE ABSTRACT:

Please add an Abstract of the Disclosure submitted herewith on a separate page.

REMARKS

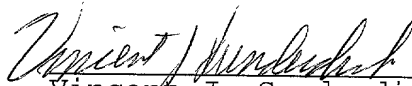
Entry of the amendments to the specification, claims and abstract before examination of the application is respectfully requested.

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response and shortages in other fees, be charged, or any overpayment in fees be credited, to the Account of Evenson, McKeown, Edwards & Lenahan, P.L.L.C., Deposit Account No. 05-1323 (Docket #951/49160).

Respectfully submitted,

September 11, 2000



Vincent J. Sunderdick
Registration No. 29,004

VJS/rrt

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--ABSTRACT OF THE DISCLOSURE

Operational process and arrangement for controlling transmission of information from nodes that are connected with one another through a star coupled configuration of a data bus with at least one of the nodes being connected by a light guide to the data bus. The nodes transmit information by a transmission sequence beginning with synchronization pulses having a start time which is determined to be independent of any particular node and is a function of only the transmission sequence. --

Operational Process for a Data Bus for a Plurality of Nodes

The invention relates to an operational process for a data bus for a plurality of nodes as follows from the German Patent Application 19720401.5 not previously published. Each telegram possesses an unambiguous identifier which determines the urgency of the telegram.

The data bus possess for at least one part of the nodes optical transmission segments up to the star coupler. If it is an electric star coupler these telegrams are converted into an electric signal telegram and converted via a receiver/transmitter unit once again into a preferably optical signal telegram which is thus transmitted to all the remaining nodes. A data bus of this type with at least one partially optical transmission segment possesses to that extent a particular characteristic as the signal transit time, that is, the time for the transmission of a signal (telegram) from one node to another is significantly greater than the bit time. In contradistinction thereto the signal transit time in the case of a purely electrical data bus, as, for example, is frequently used in vehicles under the designation CAN, is significantly smaller than the bit time. An additional difficulty due to the sharply differing of the signal transit times arises when additional nodes are connected to the data bus which themselves output (only) electrical signal telegrams.

An example may illustrate this. Let us assume, as represented in Figure 1, a star-shaped bus system with altogether four nodes T1 to T4 in which nodes T1, T2, and T3 are connected via an optical transmission segment L1, L2, and L3 to an active electric star coupler K. Between each of the nodes T1 and T3 and the star coupler K two SE (transmitter/receiver) units SE_{11} , SE_{12} , SE_{21} , SE_{22} , SE_{31} , and SE_{32} are disposed in which the electrical telegram present originally at the nodes is converted into an optical signal and is reconverted into an electrical signal telegram which then is given to the star coupler K. In reverse, the optical telegrams intended for the nodes starting originally from the star coupler are converted into optical telegrams and then, in turn, into electrical receiver signals.

Furthermore, an additional node T4 is disposed which is a node which is connected via an electrical transmission segment directly to the star coupler K.

Depending on the conversion time for the electrical into optical signals and vice versa (about on the order of magnitude of 60 - 100 ns each) and the transit time in the optical transmission segments (ca. 5 ns/m), transit times for telegrams of each of the nodes T1 to T3 to and from the star coupler K follow which are specified in the exemplary embodiment by way of example as 180, 240, and 200 ns. The transit time of the signals from node T4 to the star coupler K is ideally equal to 0 ns.

If one assumes, for example, a telegram which is supposed to go from node T1 to node T2 via the star coupler K, then a transit time of at least 420 ns results, for a telegram from node T3 to T2 of even 440 ns. The minimal signal transit time for telegrams here between the nodes T1 and T4 is 180 ns.

It can be seen without further effort that the transit time in the system depends strongly on the respective individual delay times in the transmission segments of the individual nodes to the active star coupler and moreover is significantly greater than the bit time, here, for example, assumed equal to 100 ns.

Let us now assume signal traffic on the data bus as follows from Figure 2 and the older patent application mentioned earlier. Between two synchronization pulses which are output by a bus master, a data transaction takes place on the data bus. In each of the cycles designated as cycle 1, cycle 2, and cycle 3 at most three telegrams are output which are the telegrams t1, t2, and t3 or t1, t4 and t5 or the telegram t3 alone. Between each of the telegrams actually transmitted at least one wait time must be adhered which follows from the following equation.

Wait time: [see original German patent, Page 3, Line 8 for equation]

Therein t_{wx0} means a fixed percentage which serves to unambiguously distinguish telegram and wait time, t_{wx_delta} a fixed multiplication percentage which depends on the maximal signal transit time in the bus system, and $ID - ID_{x-1}$ the difference of the telegram identifier. Therein ID stands for the identifier of the telegram actually to be sent by the node and ID_{x-1} for the identifier of the last telegram actually transmitted.

As can be seen without further effort the distance is minimal between two transmitted, and with regard to their identifier, sequential telegrams, therefore between the telegrams t_1 and t_2 or t_2 and t_3 as well as between t_4 and t_5 . However, for telegrams not directly sequential with regard to their identifier, such as t_4 after t_1 in cycle 2, it is greater.

With the aid of Figure 3 the calculation of the multiplication percentage t_{wx_delta} following from the transit times is to be explained.

Let two nodes be assumed, designated here as A and B. Node B transmits a telegram with $ID = 1$ and node A a telegram with $ID = 2$. Furthermore, let node A be assumed as bus master. It transmits the synchronization pulse and starts, after the end of the synchronization pulse, the wait time t_{wx} . The node B sees the end of the synchronization pulse but delayed by t_{max} and thus starts its wait time $t_{wx} t_{max}$ later. Node B begins after the expiration of the wait time

[see original German patent, Page 4, Line 3 for equation]

with the transmission of the telegram ID = 1. This telegram in turn needs t_{\max} in order to arrive at node A. Node A must still be able to receive this telegram before it, for its part, begins with the transmission of the telegram ID = 2. The following equations must therefore be satisfied from the standpoint of node A in order to avoid a collision.

Start time telegram ID = 2 > Receiving time telegram ID = 1

[see original German patent, Page 4, Line 12 for equation]

For this it follows

[see original German patent, Page 4, Line 15 for equation]

In the case of the exemplary configuration $t_{wx_delta}=880ns$ thus follows from Figure 1. In case of large identifier differences, for examples $(ID - ID_{x-1}) = 250$ a wait time of over $220 \mu s$ thus results. This means that in the case of a required cycle time of, for example, $200 \mu s$ telegrams with high identifiers cannot be transmitted at all. Furthermore, the net data throughput also sinks with the use of small IDs with t_{wx_delta} becoming greater.

The objective of the invention is to provide an operational process for a data bus for a plurality of nodes in which the degree of efficiency is increased by the wait time between the telegrams to be transmitted being reduced.

The invention realizes this objective with the characteristics of claim 1.

This solution consists in brief of adjusting the transit times delays, in particular between the nodes and the active star coupler. In the ideal case this adjustment should be performed to the extent that the signal transit times between the nodes and the star coupler are equal. The measures according to the invention consist of adapting the fixed percentage of the wait time t_{wx0} individually.

The invention will be concretized by various measures. These measures are the object of claims 2 and 3. They can be applied jointly or alternatively. These measures are explained with the aid of the additional figures.

Shown are:

Figure 4 a diagram for the explanation of the measure specified in claim 2

and

Figure 5 a diagram for the explanation of the measure specified in claim 3.

As specified in claim 2 and represented in Figure 4, the nodes distinguish the transmitting and receiving case for the last bus activity. The node which has transmitted the last bus activity (sync pulse or telegram) waits by t_{\min} longer than the (= all other) nodes which have received this bus activity. In place of the universal fixed percentage t_{wx0} a fixed percentage t_{wx0_tx} for the transmitting case or t_{wx0_rx} for the receiving case now appears.

[see original German patent, Page 5, Line 22 for equation] is for the transmitting case.

[see original German patent, Page 5, Line 23 for equation] is for the receiving case.

The following wait time must be satisfied from the view of node A in order to avoid a collision.

Start time telegram ID = 2 > Receiving time telegram ID = 1

[see original German patent, Page 5, Line 30 for equation]

For this it follows

[see original German patent, Page 5, Line 32 for equation]

Thereby the value of t_{wx_delta} can be reduced from 880 ns to 700 ns in the exemplary configuration of Figure 1.

In addition or alternatively, as specified in claim 3, the fixed percentage of the wait times t_{wx0_tx} and t_{wx0_rx} for each node is adapted to its individual delay time (here called $delay_tln$). This happens according to the following formulas.

[see original German patent, Page 6, Lines 8 and 9 for equations]

The parameters used herein have the following meaning.

Table 1

[Column 1]

Parameter:

[see original German patent, Page 6, Line 12 for entries]

[Column 2]

Meaning:

Maximal delay of a signal from the electrical part of the star coupler to the node tln in the worst case

Maximum ($delay_tln_1, delay_tln_2, . . .$)

Minimal "Bus Idle" time between telegrams

Multiplicative factor of the wait time

[Column 3]

Example:

$\text{delay}_{\mu P}$, $\text{delay}_{\mu C1}$, $\text{delay}_{\mu 2}$

Here: $\text{delay}_{tln_max} = 240 \text{ ns}$

1100 ns

In the ideal case: t_{max}

If these equations are applied to the bus configuration of Figure 1, then the parameters follow as entered in Figure 5 for the individual nodes. In Figure 5 the signal curves are furthermore shown which the individual nodes see at their bus connection.

It can be seen from Figure 5 that by the adaptation of the fixed percentage of the wait time t_{wx0_tx} and t_{wx0_rx} the nodes are synchronized. The start time of a telegram then no longer depends on the different signal transit times in the system (from optical and in a given case electrical transmission segments from and to the star coupler) but rather

only on the identifier of the telegram to be transmitted and the, in a given case, allocation of the data bus by a (more important) telegram with lower identifier. If the nodes would all transmit one and the same telegram with an identical identifier, they would do this simultaneously. Since only one node transmits each telegram with a certain identifier, a collision of telegrams is ruled out.

Thus the following now applies.

[see original German patent, Page 7, Line 7 for formula]

Thereby a halving of the multiplicative percentage of the wait time t_{wx_delta} is achieved. In the exemplary configuration of Figure 1 this means for t_{wx_delta} a value of 440 ns with respect to 880 ns. High identifiers, for example, $ID = 250$ have a wait time of ca. $t_{wx} = 110 \mu s$ and therefore can still be transmitted within a cycle of $200 \mu s$.

Since in the normal bus operation many different and, thus, also higher identifiers are used, only rarely are directly sequential identifiers transmitted within one frame. Thus the halving of t_{wx_delta} causes approximately a halving of the wait times t_{wx} . This has, in turn, nearly a doubling of the net rate of data throughput as a consequence. Overall, therefore, the degree of efficiency of the protocol is increased. In the case of a fixed net data rate the gross rate of data throughput can thus be lowered. Thereby cost

reductions are possible due to the lower frequency of signals, for example, the EMC protection can be structured more simply and not such high demands must be made of the structural parts.

For the realization of the invention adaptation and logic elements not represented are provided in the nodes which perform the specified adjustments of the starting time points for the telegram as a function of the immediately preceding activity (transmitting or receiving) of the node itself and the individual signal transit time between the node and the star coupler. Since as shown significant transit time differences between nodes with electrical connection and the nodes with optical connection are present, it is sufficient to approximately compensate these transit time differences by delaying the transmission of only the node with electrical connection by a time span which is approximately equal to the average delay time of the node of the other type (with optical connection). A sufficiently close value follows, for example 210 ns.

Operational Process for a Data Bus for a Plurality of Nodes

Claims

1. An operational process for a data bus for a plurality of nodes characterized by the fact that the nodes are in connection with one another via a star coupler, at least one part of the nodes is connected via a light guide to the star coupler, the nodes are synchronized by synchronization pulses, the telegrams are transmitted from the nodes with a hierarchical transmission sequence, and that the transmitting start time points of the telegrams are set by adaptation elements so that they are independent of the node in question and still only depend on the transmission sequence.
2. Operational process according to claim 1 characterized by the fact that by the adaptation elements the transmission time point for a telegram when the same node has previously transmitted itself is set later than when the node previously has received a telegram of another node.
3. Operational process according to claim 1 or 2 characterized by the fact that by the adaptation elements for each node within one cycle a delay time is set whose length is complementary to the signal transit time between the node and the star coupler.

[illegible]

Legende:

SE

Sende/Empfangs-IC
Treiber opt./elektr.

SI-IF
ID=3

SI-Bus Interface:
Telegramme mit

ID=83

ID=3, ID=83 sendebereit

$\mu C2$

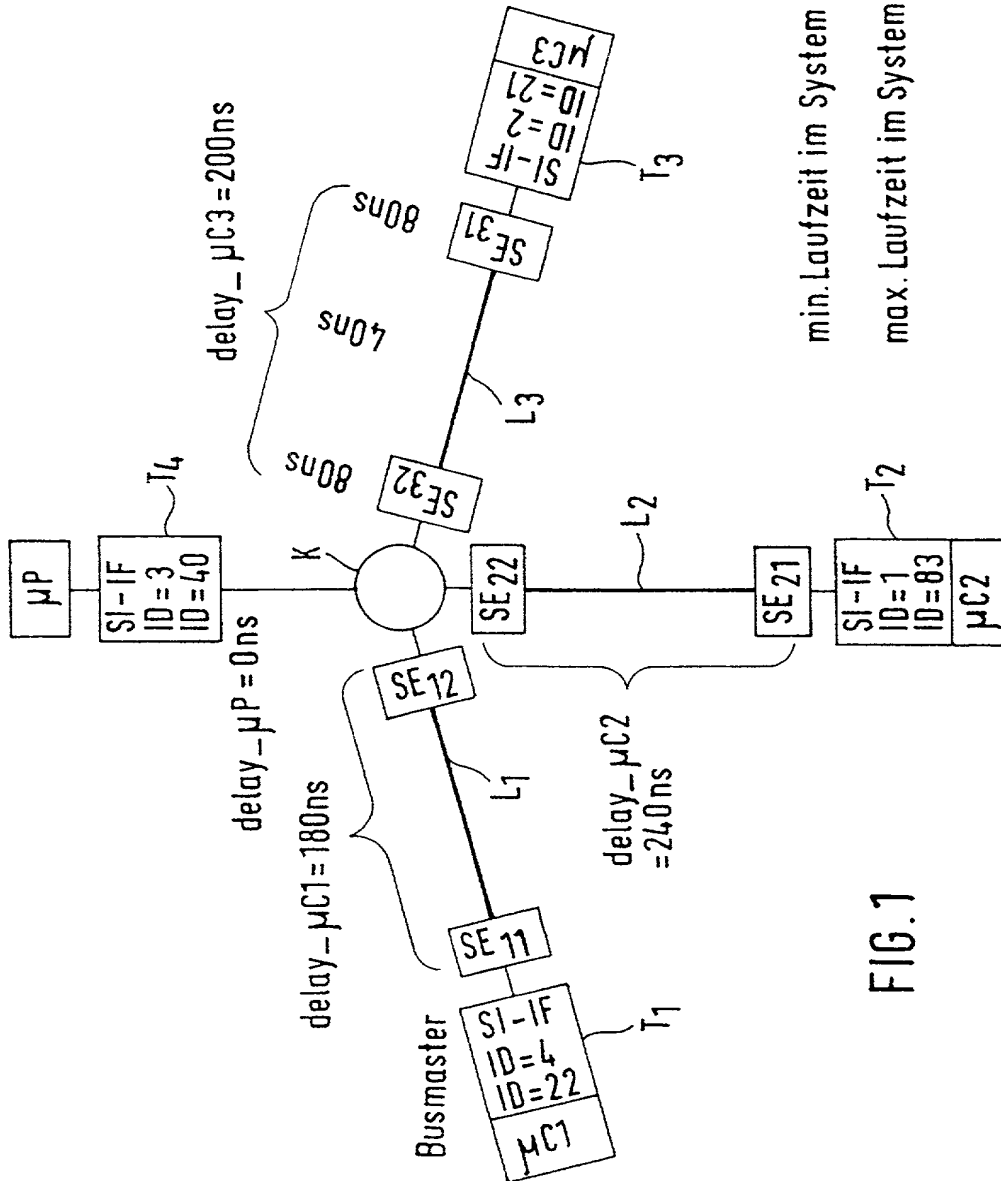
Teilnehmer $\mu C2$

ID

ident

elektrische Verbindung

Lichtwellenleiter



min.Laufzeit im System: $t_{\min} = 180\text{ns}$

max.Laufzeit im System: $t_{\max} = 440\text{ns}$

FIG. 1

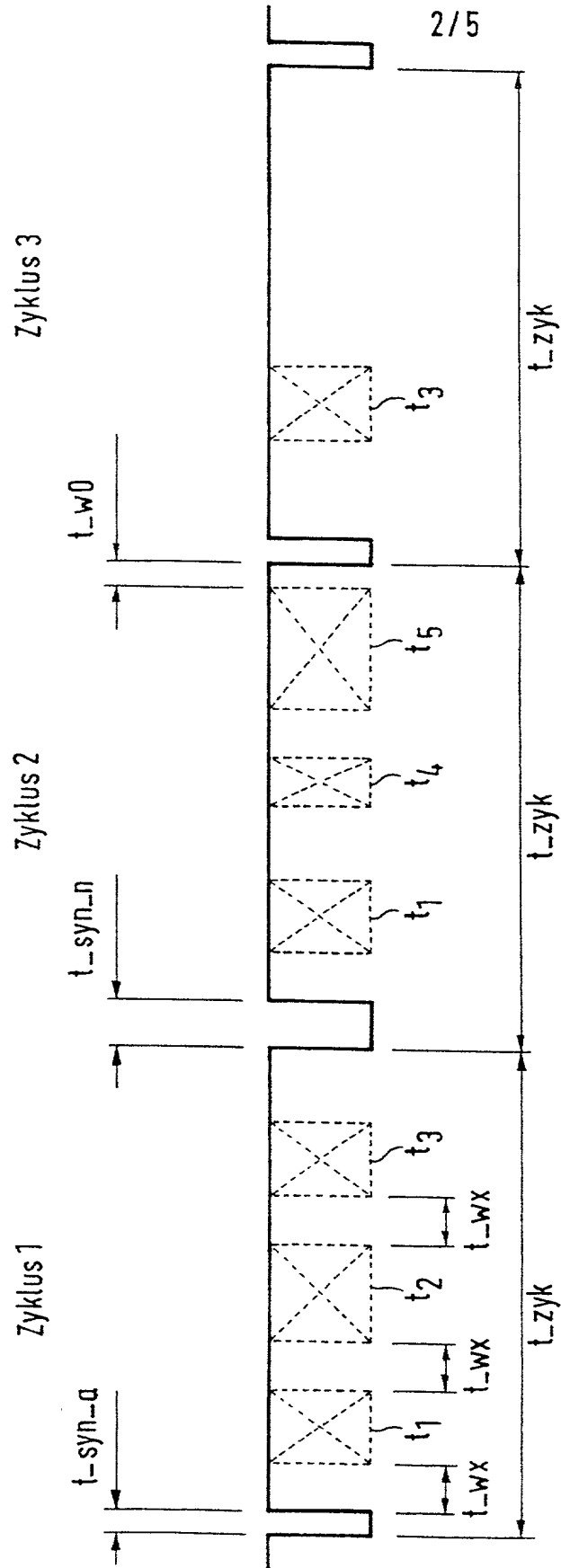


FIG.2

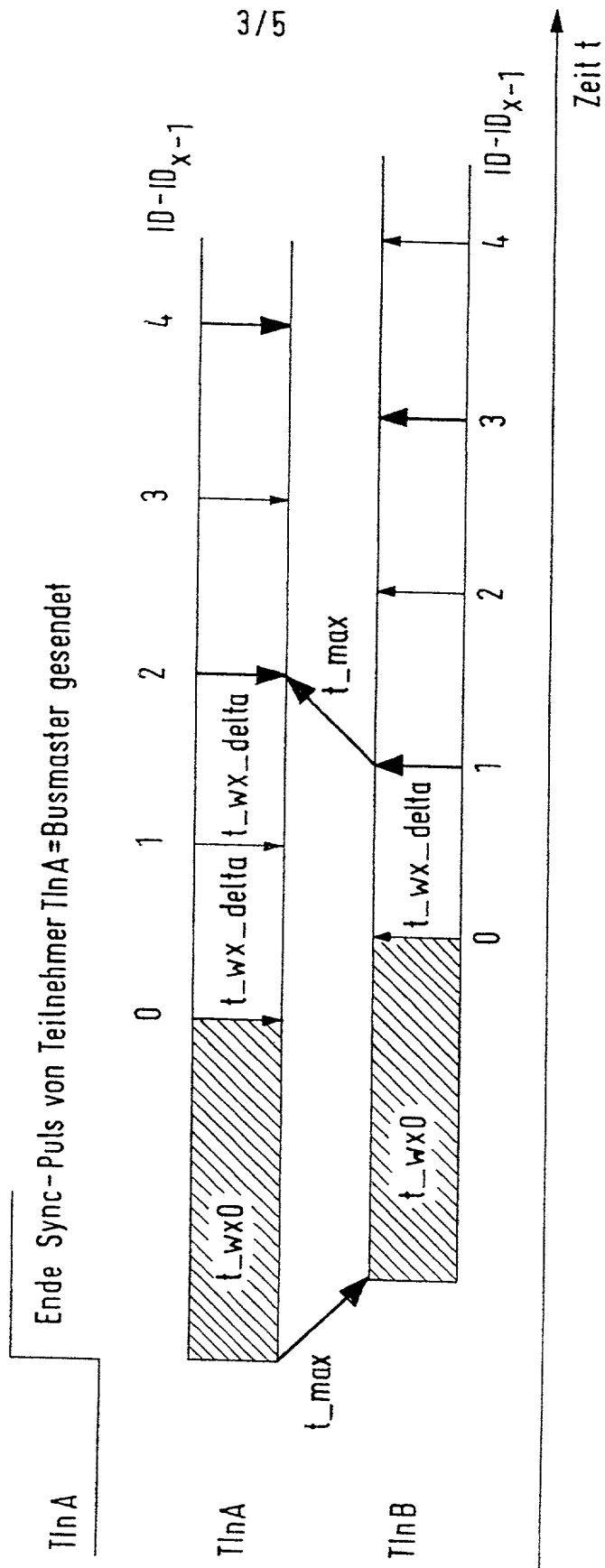


FIG. 3

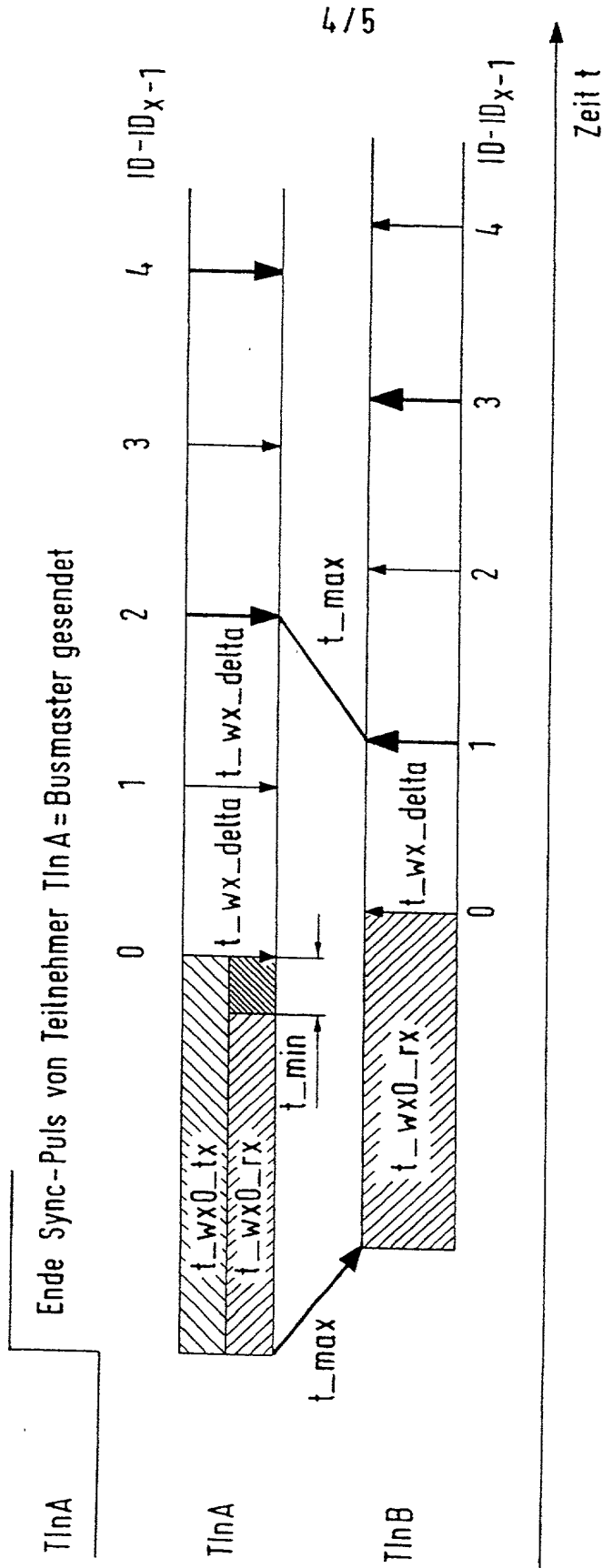


FIG.4

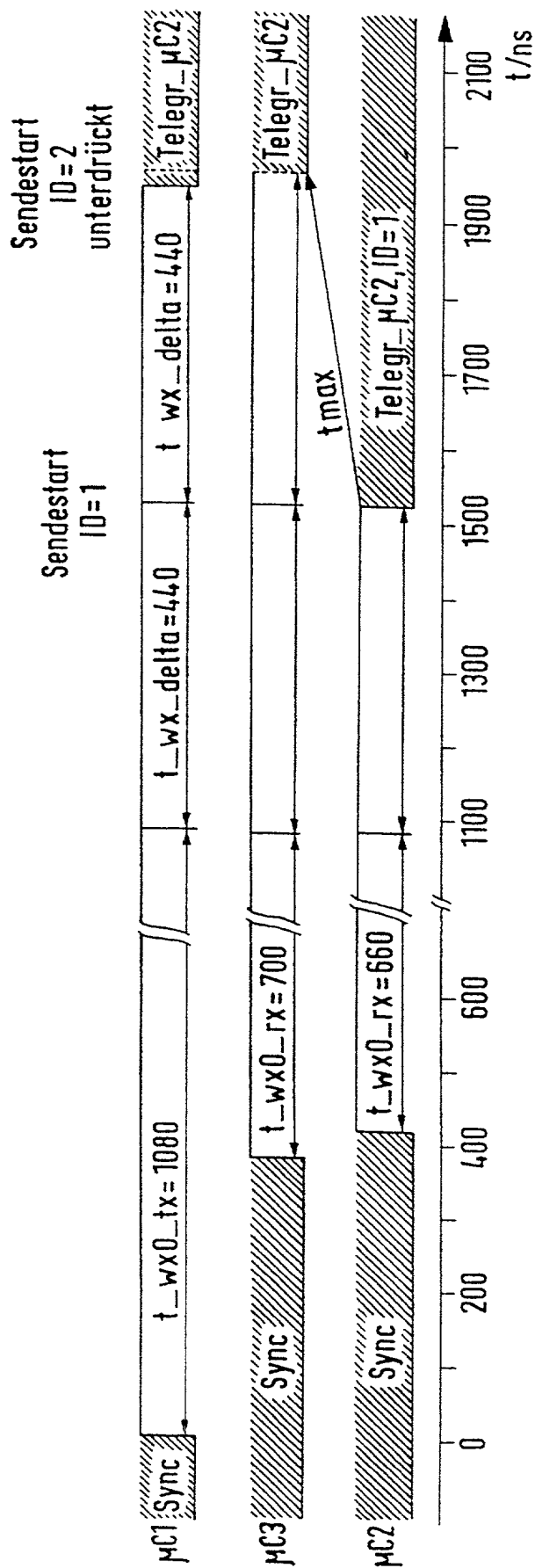


FIG.5

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
(includes Reference to PCT International Applications)

ATTORNEY'S DOCKET
NUMBER

951/49160

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Operating Method For A Data Bus For Plurality of Nodes

the specification of which (check only one item below):

☐ is attached hereto.

☐ was filed as United States application

Serial No. _____

on _____

and was amended

on _____ (if applicable).

☒ was filed as PCT international application

Number PCT/EP99/01163

on February 23, 1999

and was amended under PCT Article 19

on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations. §1.56(a).

I hereby claim foreign priority benefits under Title 35, United State Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (if PCT indicate PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
Germany	198 10 293.3	10 March 1998	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No

Combined Declaration For Patent Application and Power of Attorney (Continued)
(includes Reference to PCT international Applications)

ATTORNEY'S DOCKET NUMBER

951/49160

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national of PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120

U.S. APPLICATIONS			STATUS (Check one)		
U.S. APPLICATION NUMBER	U.S. FILING DATE		PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (IF ANY)			

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

⑧

Martin Fleit, Reg. No. 16,900; Herbert I. Cantor, Reg. No. 24,392; James F. McKeown, Reg. No. 25,406; Donald D. Evenson, Reg. No. 26,160; Joseph D. Evans, Reg. No. 26,269; Gary R. Edwards, Reg. No. 31,824; Jeffrey D. Sanok, Reg. No. 32,169; and Richard R. Diefendorf, Reg. No. 32,390

Send Correspondence to:

Evenson, McKeown, Edwards & Lenahan, P.L.L.C.
1200 G Street, N.W., Suite 700
Washington, D.C. 20005

Direct Telephone Calls to:
(name and telephone number)

(202) 628-8800

201	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
		<u>PELLER</u>	<u>Martin</u>	
		<u>Muenchen</u>	<u>DEX</u>	<u>Germany</u>
		<u>Adelheidstr. 38</u>	<u>Muenchen</u>	<u>D-80796, Germany</u>
202	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
		<u>MARSCHNER</u>	<u>Christian</u>	
		<u>Muenchen</u>	<u>DEX</u>	<u>Austria</u>
		<u>Siegfriedstr. 3</u>	<u>Muenchen</u>	<u>D-80703, Germany</u>
203	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true: and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
<u>Martin Fleit</u>	<u>Herbert I. Cantor</u>	
DATE <u>08/28/2000</u>	Date <u>08/31/2000</u>	DATE